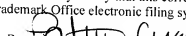
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	Darren A. Janzig, Carl D. Wahlstrand, Paulette C. Olson and Robert M. Skime	Confirmation No.	4792
Serial No.:	10/730,877		
Filed:	December 09, 2003	Customer No.:	28863
Examiner:	Alyssa M. Alter	Group Art Unit:	3762
Docket No.:	1023-335US01		
Title:	LOW-PROFILE IMPLANTABLE MEDICAL DEVICE		

CERTIFICATE UNDER 37 C.F.R. 1.8 I hereby certify that this correspondence is being transmitted via the United States Patent and Trademark Office electronic filing system on April 9, 2009.

By: 

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APPEAL BRIEF

Mail Stop Appeal Brief - Patents
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P.O. Box 1450,
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Sir:

This is an Appeal Brief in support of an appeal from the final Office Action dated December 9, 2008, which finally rejected claims 1–15, 17–32, and 34–36. The Notice of Appeal was filed on February 9, 2009. The time period for filing this Appeal Brief runs through April 9, 2009.

Please charge Deposit Account No. 50-1778 the amount of $540.00 for submission of this Appeal Brief, as required by 37 C.F.R. §41.37(a)(2) for a large entity. Please charge any additional fees that may be required or credit any overpayment to Deposit Account No. 50-1778.

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REAL PARTY OF INTEREST

The Real Party of Interest is Medtronic, Inc. of Minneapolis, Minnesota.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences for the above-referenced patent application.

STATUS OF CLAIMS

Claims 1–15, 17–32, and 34–36 are pending and are the subject of this appeal. Claims 1–15, 17–32, and 34–36 are set forth in Appendix A. Originally filed claims 16 and 33 were canceled in an Amendment filed on September 5, 2006. Claim 36 was added by way of an Amendment filed on August 4, 2008.

Claims 1–15 and 17–21 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellant regards as the invention.

Claims 1–9, 15, 17–19, 20–22, 29, 31, 32, 34, and 35 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg et al. (U.S. Patent No. 5,144,946, hereinafter "Weinberg '946").

Claims 1, 9, 10, 15, 18–21, 32, and 35 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg et al. (U.S. Patent No. 5,674,260, hereinafter "Weinberg '260").

Claims 22, 25, 26, 28–32, 34, and 35 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Engmark et al. (U.S. Patent Application Publication No. 2004/0082977, hereinafter "Engmark").

Claims 10–14, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '946.

Claims 11–14, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '260.

Claims 8, 23, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '946 in view of Bardy et al. (U.S. Patent Application Publication No. 2002/0042634, hereinafter "Bardy").

STATUS OF AMENDMENTS

Appellant has not submitted any amendments subsequent to the issuance of the final Office Action dated December 9, 2008. The claims on appeal are those submitted in the Amendment filed on August 4, 2008 in response to the nonfinal Office Action dated May 2, 2008. The final Office Action dated December 9, 2008 indicates that the Amendment was entered by the Examiner.

SUMMARY OF CLAIMED SUBJECT MATTER

In general, Appellant's disclosure relates to an arrangement of components within an implantable medical device that facilitates a low-profile housing of the medical device.[1]

Independent claim 1 is directed to an implantable medical device[2] comprising a plurality of integrated circuits,[3] a plurality of discrete components,[4] a circuit board[5] that is coupled to each of the integrated circuits and discrete components,[6] and a housing[7] to house the circuit board.[8] According to claim 1, the circuit board comprises first[9] and second[10] opposing surfaces,[11] the housing houses the first and second surfaces,[12] each of the integrated circuits is located on the first surface,[13] and each of the discrete circuit components is located on the second surface.[14] In addition, claim 1 specifies that at least one of the integrated circuits or discrete components are arranged on the respective one of the first or second surfaces to substantially conform to a first predetermined non-linear profile[15] that is based on a second non-linear profile of the housing.[16]

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[1] Appellant's disclosure at Abstract.
[2] *Id.* at page 7, lines 18 and 19, and implantable medical device 10 shown in FIGS. 1 and 2.
[3] *Id.* at page 17, lines 5 and 6, and integrated circuits 114 shown in FIG. 7.
[4] *Id.* at page 17, lines 6–8, and discrete components 116 shown in FIG. 7.
[5] *Id.* at page 17, lines 4 and 5, and circuit board 80 shown in FIG. 7.
[6] *Id.* at page 17, lines 5–8.
[7] *Id.* at page 15, lines 21 and 22, and housing 36 shown in FIGS. 5 and 6.
[8] *Id.* at page 15, lines 21 and 22.
[9] *Id.* at page 17, lines 4 and 5, and first side 110 of circuit board 80 shown in FIG. 7.
[10] *Id.* at page 17, lines 4 and 5, and second side 112 of circuit board 80 shown in FIG. 7.
[11] *Id.* at page 17, lines 4 and 5, and circuit board 80 shown in FIG. 7 including opposing surfaces.
[12] *Id.* at page 15, lines 21 and 22, and FIG. 6, which illustrates housing 36 around circuit board 80.
[13] *Id.* at page 17, lines 5 and 6, and FIG. 7, which illustrates integrated circuits 114 on first side 110 of circuit board 80.
[14] *Id.* at page 17, lines 6–8, and FIG. 7, which illustrates discrete components 116 on second side 112 of circuit board 80.
[15] *Id.* at page 17, lines 28–30.
[16] *Id.* at page 17, line 30 – page 18, line 4.

Independent claim 22 is directed to an implantable medical device[17] comprising a circuit board,[18] a telemetry coil[19] that encircles the circuit board,[20] and a housing[21] to house the circuit board and the telemetry coil. Claim 22 specifies that the circuit board[22] is located substantially within a first plane[23] and the telemetry coil[24] is located substantially within a second plane[25] that is different than the first plane, the first and second planes are substantially parallel,[26] and the telemetry coil is substantially uneclipsed[27] by the circuit board in a direction substantially perpendicular to at least one of the first or second planes.[28]

Independent claim 32 is directed to an implantable medical device[29] comprising a housing[30] that includes a major surface[31] and a side surface,[32] where the side surface includes a feedthrough[33] that is oriented at a non-parallel, non-perpendicular angle[34] relative to the major surface.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellant submits the following grounds of rejection to be reviewed on appeal:

(1) The first ground of rejection to be reviewed on appeal is the rejection of claims 1–15 and 17–21 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellant regards as the invention.

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[17] *Id.* at page 7, lines 18 and 19 and implantable medical device 10 shown in FIGS. 1 and 2.
[18] *Id.* at page 15, lines 21 and 22, and circuit board 80 shown in FIG. 5.
[19] *Id.* at page 15, line 28, and telemetry coil 82 shown in FIG. 5.
[20] *Id.* at page 15, line 29 – page 16, line 2, and FIG. 5, which illustrate telemetry coil 82 encircling circuit board 80.
[21] *Id.* at page 15, lines 21 and 22, and housing 36 shown in FIG. 5.
[22] *Id.* at page 15, line 29 – page 16, line 2, and FIG. 5, which illustrate telemetry coil 82 encircling circuit board 80.
[23] *Id.* at page 16, lines 3 and 4, and first plane 90 shown in FIG. 6.
[24] *Id.* at page 15, line 28, and telemetry coil 82 shown in FIG. 5.
[25] *Id.* at page 16, line 4, and second plane 92 shown in FIG. 6.
[26] *Id.* at page 16, line 5, and FIG. 6, which illustrates substantially parallel planes 90, 92.
[27] *Id.* at page 15, line 29 – page 16, line 2.
[28] *See* FIG. 6, which illustrates telemetry coil 82 encircling circuit board 80, and telemetry coil 82 and circuit board 80 in different planes, such that telemetry coil 80 is substantially uneclipsed by circuit board 80 in a direction substantially perpendicular to at least one of planes 90, 92.
[29] *Id.* at p. 7, ll. 18 and 19 and implantable medical device 10 shown in FIGS. 1 and 2.
[30] *Id.* at page 15, lines 21 and 22, and housing 36 shown in FIG. 6.
[31] *Id.* at page 16, lines 26–28, and top 104 of housing 36 shown in FIG. 6.
[32] *Id.* at page 16, line 31.
[33] *Id.* at page 16, lines 23–26 and feedthroughs 100A and 100B shown in FIG. 6.
[34] *Id.* at page 16, lines 26–29, and angle 102 shown in FIG. 6.

(2) The second ground of rejection to be reviewed on appeal is the rejection of claims 1–9, 15, 17–22, 29, 31, 32, 34, and 35 under 35 U.S.C. § 102(b) as being anticipated by Weinberg '946.

(3) The third ground of rejection to be reviewed on appeal is the rejection of claims 1, 9, 10, 15, 18–21, 32, and 35 under 35 U.S.C. § 102(b) as being anticipated by Weinberg '260.

(4) The fourth ground of rejection to be reviewed on appeal is the rejection of claims 22, 25, 26, 28–32, 34, and 35 under 35 U.S.C. § 102(e) as being anticipated by Engmark.

(5) The fifth ground of rejection to be reviewed on appeal is the rejection of claims 10–14, 25, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '946.

(6) The sixth ground of rejection to be reviewed on appeal is the rejection of claims 11–14, 25, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '260.

(7) The seventh ground of rejection to be reviewed on appeal is the rejection of claims 8, 23, and 24 under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '946 in view of Bardy.

(8) The eighth ground of rejection to be reviewed on appeal is the rejection of claim 36.

ARGUMENT

Appellant respectfully traverses the rejections of claims 1–15, 17–32, and 34–36 advanced in the final Office Action dated December 9, 2008, and requests reversal by the Board of Patent Appeals based on the arguments below. For each ground of rejection, Appellant respectfully requests separate review of each set of claims argued under separate headings.

For at least the reasons presented below, the Examiner has failed to establish that Appellant's claims 1–15 and 17–21 fail to comply with 35 U.S.C. § 112, second paragraph. In addition, for at least the reasons presented below, the Examiner has failed to establish a *prima facie* case of anticipation or obviousness with respect to Appellant's claims 1–15, 17–32, and 34–36.

FIRST GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIMS 1–15 AND 17–21 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 1–15 and 17–21 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellant regards as the invention.

In support of the rejection of claims 1–15 and 17–21 under 35 U.S.C. § 112, second paragraph, the Examiner stated that there "there is insufficient antecedent basis for" the claimed feature "a second non-liner [sic] profile of the housing" in independent claim 1 "since there is no description in the specification for "a second profile."[35] This reasoning provided by the Examiner is insufficient to support the rejection of the claims as being indefinite.

Whether or not there is "antecedent basis" for claim language is not the proper standard for determining compliance with 35 U.S.C. § 112, second paragraph. As discussed in the MPEP, "[t]here is no requirement that the words in the claim must match those used in the specification disclosure."[36] Moreover, a disclosure as originally filed does not have to provide *in haec verba* support for claimed subject matter in order to satisfy the written description requirement.[37] Thus, to the extent the Examiner is relying on the failure of Appellant to specifically recite "a second non-linear profile" in the specification to support the rejection of claims 1–15 and 17–21 under 35 U.S.C. § 112, second paragraph, Appellant submits that the Examiner has failed to meet the burden of demonstrating that the claims are indefinite.

The Examiner has failed to provide a reasoning other than the "insufficient antecedent basis" rationale to support the rejection of claims 1–15 and 17–21 under 35 U.S.C. § 112, second paragraph. Given the fact that, "[t]here is no requirement that the words in the claim must match those used in the specification disclosure,"[38] the Examiner has failed to provide a sufficient analysis as to why the claimed feature "second non-linear profile" is indefinite.[39]

The scope of claims 1–15 and 17–21 is clear and definite. The proper consideration for determining whether claim language meets the limitations of 35 U.S.C. § 112, second paragraph is whether the claim as a whole apprises one of ordinary skill in the art of its scope,[40] and

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[35] Final Office Action dated December 9, 2008 at page 2, item 1.
[36] MPEP 2173.05(e).
[37] *Purdue Pharma L.P. v. Faulding, Inc.*, 230 F.3d 1320, 56 USPQ.2d 1481 (Fed. Cir. 2000).
[38] MPEP 2173.05(e).
[39] *See* MPEP 2173.02, which states that the Examiner should provide an "analysis as to why the phrase(s) used in the claim" is indefinite.
[40] MPEP 2173.02.

whether the claim terms define the invention with a reasonable degree of clarity and precision.[41] According to the MPEP 2173.02, definiteness of claim language must not be analyzed in a vacuum. Instead, the definiteness of the claim language must be analyzed in light of the content of Appellant's disclosure and the claim interpretation that would be given by one possession the ordinary level of skill in the pertinent art at the time the invention was made.[42]

Appellant submits that the language of independent claim 1 sufficiently apprises one of ordinary skill in the art of the scope of claim 1 and defines the invention with a reasonable degree of clarity and precision. Appellant's claim 1 specifies that the integrated circuits or discrete components are arranged on the respective one of the first or second surfaces to substantially conform to a first predetermined non-linear profile that is based on a second non-linear profile of the housing. One having ordinary skill in the art would understand that the integrated circuits and/or discrete components are arranged on the respective surfaces in order to substantially conform to a predetermined non-linear profile that is based on a profile of a housing. The recitation of a "first" non-linear profile and a "second" non-linear profile in claim 1 is merely for enumerative purposes, i.e., to distinguish between the recited profiles and to provide proper antecedent basis for the recited profiles within claim 1.

A "second non-linear profile of the housing" clearly refers to a profile of a housing of the medical device. Appellant's disclosure describes a housing including a non-linear profile. For example, the disclosure describes a "low-profile, concave housing."[43] In addition, Appellant's disclosure states that in some examples, "integrated circuits and/or discrete components can be arranged on [a] circuit board according to height to conform to a predetermined non-linear profile, e.g., to better conform to the concavity of the housing."[44] Claim 8 as originally filed also specifies that, "the predetermined non-linear profile comprises a profile of the housing." Appellant's disclosure provides sufficient description of a "second non-linear profile of the housing," i.e., a profile of a housing, such that the language of claim 1, when read in light of Appellant's disclosure, apprises one of ordinary skill in the art of its scope.

In both the nonfinal Office Action dated May 2, 2008 and the final Office Action dated December 9, 2008, the Examiner requested "further clarification" regarding the recitation of the

[41] MPEP 2173.05(e).
[42] MPEP 2173.02.
[43] Appellant's disclosure at paragraph [0040].
[44] *Id.* at paragraph [0010].

"second non-linear profile" recited in claim 1.[45] Appellant submits that further clarification was provided in the Amendment filed on August 4, 2008 in response to the nonfinal Office Action dated May 2, 2008. The final Office Action neither addresses nor acknowledges the Appellant's remarks that were provided in the Amendment filed on August 4, 2008 to clarify the claimed "second non-linear profile." As provided in MPEP 707.07(f), where an appellant traverses any rejection, the Examiner should, if he or she repeats the rejection, take note of Appellant's argument and answer the substance of it. The Examiner has failed to provide any answer to the substance of Appellant's arguments made in the Amendment filed on August 4, 2008 with respect to the rejection of claims under 35 U.S.C. § 112, second paragraph.

For at least these reasons, Appellant submits that claims 1–15 and 17–21 meet the limitations of 35 U.S.C. § 112, second paragraph. Reversal of the Examiner's rejection of claims 1–15 and 17–21 under 35 U.S.C. § 112, second paragraph is respectfully requested.

SECOND GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIMS 1–9, 15, 17–22, 29, 31, 32, 34, AND 35 UNDER 35 U.S.C. § 102(b) AS BEING ANTICIPATED BY WEINBERG '946

Claims 1–9, 15, 17–22, 29, 31, 32, 34, and 35 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg '946.

CLAIMS 1–3, 5, 6, 9, AND 19–21

Independent claim 1 is directed to an implantable medical device (IMD) that comprises a plurality of integrated circuits located on a first surface of a circuit board, a plurality of discrete components located on a second surface of the circuit board, where the second surface opposes the first surface, and a housing to house the circuit board. According to claim 1, at least one of the integrated circuits or discrete components are arranged on the respective one of the first or second surfaces to substantially conform to a first predetermined non-linear profile that is based on a second non-linear profile of the housing.

Weinberg '946 fails to disclose or suggest the IMD of Appellant's claim 1. For example, Weinberg '946 fails to disclose or suggest an IMD that comprises integrated circuits or discrete components that are arranged on a respective one of first or second surfaces of a circuit board to

[45] Nonfinal Office Action dated May 2, 2008 at p. 3, item 1, and final Office Action dated December 9, 2008 at p. 2, item 1.

substantially conform to a predetermined non-linear profile that is based on a non-linear profile of the housing.

In support of the rejection of claim 1 as being anticipated by Weinberg '946, the Examiner characterized the electrical components 56 of the Weinberg '946 pacemaker as integrated circuits and the tantalum capacitor 57 as a discrete component.[46] According to the Examiner, FIGS. 4A and 4B of Weinberg '946 illustrate the electrical components 56 and capacitor 57 on opposing sides of a substrate 54, which the Examiner appeared to characterize as a circuit board.[47] The Examiner asserted that "the electrical components are arranged in a non-linear profile with respects [sic] to the second profile of the housing" because the electrical components and capacitors "vary in height and . . . are made to fit in the housing."[48] According to the Examiner, the housing of the Weinberg '946 device includes a non-linear profile because it includes "non-linear rounded corners."[49]

Contrary to the Examiner's assertion, the electrical components 56 disclosed by Weinberg '946 are not arranged on the substrate 54 to substantially conform to a predetermined non-linear profile that is based on the "non-linear rounded corners" of the housing 12 that houses the substrate 54. Weinberg '946 fails to disclose or even suggest that the electrical components 56 are arranged on the substrate 54 to substantially conform to any particular profile. In addition, Weinberg '946 is completely silent as to any relationship between a profile of the electrical components 56 and a profile of the housing 12 that houses the substrate 54.

Arranging the electrical components 56 to fit in a housing does not in any way suggest that the profile of the electrical components 56 is based on a profile of the housing 54 of Weinberg '946, as asserted by the Examiner. The profile of the electrical components 56 is not similar to the profile of the housing of the Weinberg '946 device. Weinberg '946 does not disclose or even suggest that the electrical components 56 have any particular profile, thus, it is unclear how Weinberg '946 discloses that the electrical components 56 are arranged on the substrate 54 to substantially conform to a non-linear profile that is based on the profile of the housing 12 that houses the substrate 54.

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[46] Final Office Action dated December 9, 2008 at p. 3, item 1.
[47] *Id.*
[48] *Id.*
[49] *Id.* at pp. 3 and 4, item 1.

Appellant's independent claim 1 is not merely directed at an IMD that includes integrated circuits or discrete components located on respective surfaces of a circuit board, where the circuit board, integrated circuits, and discrete components are "made to fit" within a housing. In addition, claim 1 is not directed at an IMD that includes an arrangement of integrated circuits or discrete components that substantially conforms to any non-linear profile. Instead, claim 1 requires the integrated circuits and/or discrete components to be arranged to substantially conform to a specific profile, i.e., a predetermined non-linear profile, where the specific profile is based on a non-linear profile of the housing that houses the circuit board. In an example provided in Appellant's disclosure, integrated circuits and/or discrete components are arranged on a circuit board according to height to conform to a predetermined non-linear profile, e.g., to better conform to the concavity of a housing.[50]

The Examiner asserted that in Weinberg, the electrical components 56 are arranged on a substrate 54 to substantially conform to a first predetermined non-linear profile that is based on a second non-linear profile of a housing because the components 56 are "made to fit" in the housing.[51] However, conforming the electrical components 56 of Weinberg '946 to fit in a housing 12 does not necessarily require a consideration of a specific profile of the electrical components 56 or a consideration of a non-linear profile of the housing 12.

Given the lack of disclosure in Weinberg '946, the Examiner appears to be relying on an improper finding of an inherent disclosure in Weinberg '946 to support the rejection of claim 1. The fact that a certain characteristic may be present in the prior art is not sufficient to establish the inherency of that result or characteristic.[52] The Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.[53] The Examiner has not provided reasonable support for the determination that electrical components 56 described by Weinberg '946 are necessarily arranged to substantially conform to a predetermined non-linear profile that is based on a profile of the housing 12 because of the mere fact that the electrical components 56 fit within the housing 12. Rather, other profiles of the electrical components 56

[50] Appellant's disclosure at paragraph [0010].
[51] Final Office Action dated December 9, 2008 at p. 3, item 1.
[52] *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ.2d 1955, 1957 (Fed. Cir. 1993); MPEP § 2112.
[53] *Ex parte Levy*, 17 USPQ.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original); MPEP 2112.

that are independent of the profile of the housing 12 are just as likely in view of the lack of description provided by the Weinberg '946 reference.

FIGS. 4A and 4B of Weinberg '946, which were cited by the Examiner, suggest that the electrical components 56 may be arranged in any particular way on the substrate 54 and still fit within the housing 12. Weinberg '946 even discloses that the electrical components 56 are covered with another structure within the housing 12, thereby decoupling the relationship between the profile of the electrical components 56 and the profile of the housing 12. In particular, Weinberg '946 discloses that the substrate 54 is mounted onto a structure 32 that protects the electronic components 56.[54] Accordingly, the objective of fitting the electrical components 56 within the housing 12 does not appear to be a consideration for the arrangement of the electrical components 56 on the substrate. Indeed, Weinberg '946 would not have suggested the IMD of Appellant's claim 1 because it appears that any arrangement of the components 56 of Weinberg '946 device on the substrate 54 would fit in the housing 12 of Weinberg '946.

Weinberg '946 neither discloses nor suggests each and every element of Appellant's claim 1. Claims 2, 3, 5, 6, 9, and 19–21 depend from claim 1 and, therefore, Weinberg '946 also fails to disclose or suggest each and every element of claims 2, 3, 5, 6, 9, and 19–21. For at least these reasons, the rejection of claims 1–3, 5, 6, 9, and 19–21 should be reversed.

CLAIM 4

Claim 4 specifies that the IMD of claim 1 includes a telemetry coil within the housing that encircles the circuit board and is substantially uneclipsed by the circuit board. In support of the rejection of claim 4 as being anticipated by Weinberg '946, the Examiner asserted that FIG. 4B of Weinberg '946 illustrates the telemetry coil 59 encircling the substrate 54, which the Examiner characterized as a circuit board. Even if the substrate 54 disclosed by Weinberg '946 is a circuit board, FIG. 4B (reproduced below) of Weinberg '946 does not illustrate a telemetry coil 59 that is substantially uneclipsed by a circuit board, as required by Appellant's claim 4.

[54] Weinberg '946 at col. 5, ll. 56–59.

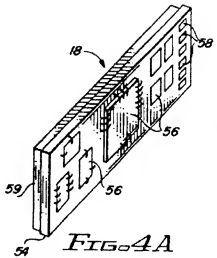

FIG. 4A FIG. 4B

Instead, as illustrated in FIG. 4B of Weinberg '946, the telemetry coil 59 is completely eclipsed by the substrate 54. In addition, as illustrated in FIG. 4A (reproduced above), the substrate 54 appears to extend past the telemetry coil 59, further indicating that Weinberg '946 discloses an IMD in which such that the telemetry coil 59 is completely eclipsed by the substrate 54. Weinberg '946 does not provide any description to support the Examiner's assertion that Weinberg '946 discloses an IMD in which the telemetry coil 59 is substantially uneclipsed by the circuit board, as required by claim 4. In addition, it does not necessarily follow that the telemetry coil 59 in Weinberg '946 is substantially uneclipsed by the substrate 54, particularly given the lack of disclosure and FIGS. 4A and 4B, which indicate otherwise.

For at least these reasons, Weinberg '946 fails to disclose or suggest the requirements of claim 4, and the rejection of claim 4 should be reversed.

CLAIM 7

Claim 7 states that the housing of claim 1 includes a central portion and a taper portion, where the circuit board is located within the central portion and a telemetry coil is located within the taper portion. Claim 7 was rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg '946. While the Examiner noted that Weinberg '946 discloses a telemetry coil 59, the Examiner failed to meet the burden of demonstrating how Weinberg '946 anticipates claim 7. The Examiner failed to provide any explanation of how Weinberg '946 discloses a housing that defines a central portion and a taper portion, much less an IMD in which a circuit board is located within the central portion and a telemetry coil is located within the taper portion. Thus,

based on the failure of the Examiner to meet the burden of demonstrating that Weinberg '946 discloses each and every element of claim 7, Appellant respectfully requests reversal of the rejection of claim 7.

Weinberg '946 fails to disclose or suggest a housing that defines a central portion and a taper portion, and, therefore, does not anticipate claim 7. As shown in FIG. 2 (reproduced below) of Weinberg '946, the housing 12 does not define a central portion and a taper portion.

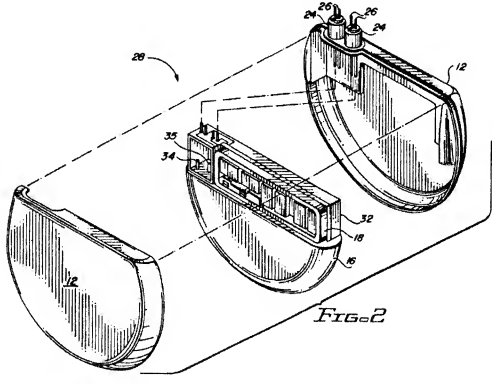

FIG-2

Moreover, the electronics package 18, of which the substrate 54 (the "circuit board" according to the Examiner) and the telemetry coil 59 are not arranged in a central portion and a taper portion, respectively, of any housing of the Weinberg '946 pacemaker. For at least these reasons, Weinberg '946 fails to anticipate claim 7.

CLAIM 8

Claim 8 was rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg '946. However, the Examiner failed to provide any explanation of how Weinberg '946 discloses or suggests each and every element of claim 8. Accordingly, the Examiner failed to meet the burden of demonstrating that Weinberg '946 discloses each and every element of claim 8. On at least this ground, Appellant respectfully requests reversal of the rejection of claim 8.

Claim 8 requires the housing of the IMD that houses the circuit board to have a non-linear profile, and the integrated circuits and/or discrete components to be arranged on a circuit board to substantially conform to the non-linear profile of the housing. Weinberg '946 fails to disclose or suggest that the electrical components 56 (the "integrated circuits" according to the Examiner) of its pacemaker are arranged in a predetermined non-linear profile. Even if the electrical components 56 are arranged in a predetermined non-linear profile, as asserted by the Examiner, Weinberg '946 does not suggest that the profile of electrical components 56 comprises a profile of the housing 12.

FIG. 2 (reproduced above) of Weinberg '946 suggests that the electrical components 56 and housing 12 either have the same linear profile or have different profiles, to the extent that the electrical components 56 are arranged in a non-linear profile. Regardless of the profile of the electrical components 56 of the Weinberg '946 pacemaker, the electrical components 56 do not have a profile that comprises a non-linear profile of the housing 12. Thus, claim 8 is not anticipated by Weinberg '946.

CLAIMS 15, 17, AND 18

Claim 15 requires a housing of the IMD of claim 1 to comprise a feedthrough on a side surface that is oriented at a non-parallel, non-perpendicular angle relative to a major surface of the housing. The Examiner asserted that claim 15 is anticipated by Weinberg '946. In support of the rejection of claim 15, the Examiner merely stated that, "the feedthroughs 24 [of Weinberg '946] are located at a non-parallel and non-perpendicular angle relative to a major surface of the housing."[55] Contrary to the Examiner's assertion, Weinberg '946 fails to disclose or suggest the orientation of the feedthrough recited in claim 15. Thus claim 15, as well as claims 17 and 18, which depend from claim 15 are patentable over Weinberg '946.

FIG. 2 of Weinberg '946 (an annotated copy is reproduced below) illustrates feedthroughs 24 that are located on a surface (labeled "Surface A" below) of the housing 12, where Surface A appears to be substantially perpendicular to a major surface (e.g., "Surface B" labeled below) of the housing 12. Claim 15 requires the surface on which the feedthrough is on, i.e., Surface A in FIG. 2 of Weinberg '946 reproduced below, to be substantially non-parallel and non-perpendicular, to a major surface of the housing, i.e., Surface B in FIG. 2 of Weinberg '946.

[55] Weinberg '946 at p. 4, item 1.

Thus, at least FIG. 2 of Weinberg '946 demonstrates that claim 15 is unanticipated by Weinberg '946.

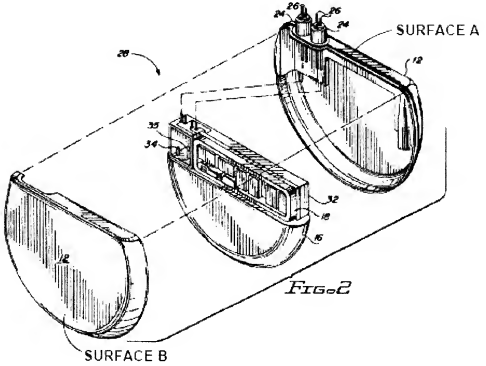

FIG. 2

Weinberg '946 does not describe the orientation of the feedthroughs 24 on the housing 12. Moreover, the Examiner did not provide any explanation of how Weinberg '946 discloses that a side surface of the housing 12 includes a feedthrough that is oriented at a non-parallel, non-perpendicular angle relative to a major surface of the housing 12. For at least these reasons, the rejection of claims 15, 17, and 18 should be reversed.

CLAIMS 22 AND 29–31

Independent claim 22 is directed to an IMD that comprises a circuit board, a telemetry coil that encircles the circuit board, and a housing to house the circuit board and the telemetry coil. According to claim 22, the circuit board is located substantially within a first plane and the telemetry coil is located substantially within a second plane that is different than the first plane, the first and second planes are substantially parallel, and the telemetry coil is substantially uneclipsed by the circuit board in a direction substantially perpendicular to at least one of the first or second planes.

Independent claim 22 was rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg '946. Appellant respectfully disagrees that Weinberg '946 discloses each and every element of Appellant's independent claim 22. In support of the rejection of independent claim 22, the Examiner asserted that FIG. 4B of Weinberg '946 depicts "the telemetry coil 59 encircling the circuit board . . . and located in a different plane than the circuit board."[56]

As discussed with respect to claim 3, even if the substrate 54 disclosed by Weinberg '946 is a circuit board, the telemetry coil 59 disclosed by Weinberg '946 is not substantially uneclipsed by the substrate 54. Instead, as illustrated in FIG. 4B (reproduced above) of Weinberg '946, the telemetry coil 59 is completely eclipsed by the substrate 54. In addition, as illustrated in FIG. 4A (also reproduced above), the substrate 54 appears to extend past the telemetry coil 59, further indicating that Weinberg '946 discloses an IMD in which such that the telemetry coil 59 is completely eclipsed by the substrate 54.

Weinberg '946 does not provide any description to support the Examiner's assertion that Weinberg '946 discloses an IMD in which the telemetry coil 59 is substantially uneclipsed by the circuit board in a direction substantially perpendicular to at least one of the planes in which the telemetry coil 59 and substrate 54 are located. In addition, it does not necessarily follow that the telemetry coil 59 in Weinberg '946 is substantially uneclipsed by the substrate 54, particularly given the lack of disclosure in Weinberg '946 and FIGS. 4A and 4B of Weinberg '946, which indicate otherwise.

For at least these reasons, Weinberg '946 neither discloses nor suggests each and every element of Appellant's independent claim 22. Claims 29–31 depend from claim 22 and, therefore, are also patentable over Weinberg '946. Reversal of the rejection of claims 22 and 29–31 is respectfully requested.

CLAIMS 32, 34, AND 35

Independent claim 32 is directed to an IMD comprising a housing that includes a major surface and a side surface, wherein the side surface includes a feedthrough that is oriented at a non-parallel, non-perpendicular angle relative to the major surface. Independent claim 32 was rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg '946. The Examiner, however, did not specifically address independent claim 32 or explain how Weinberg '946

[56] Final Office Action dated December 9, 2008 at p. 4, item 1.

discloses each and every element of claim 32. With respect to the rejection of claim 15, the Examiner asserted that FIG. 2 of Weinberg '946 illustrates feedthroughs 24 that are "located at a non-parallel and non-perpendicular angle relative to a major surface of the housing." Appellant respectfully disagrees.

As discussed above with respect to claim 15, FIG. 2 of Weinberg '946 illustrates feedthroughs 24 that are substantially perpendicular to a major surface of the housing 12, rather than substantially non-parallel, non-perpendicular, as required by claim 32. Thus, based on a failure of Weinberg '946 to disclose or suggest the orientation of the feedthroughs 24 relative to a major surface of the housing 12 required by Appellant's independent claim 32, as well as the failure of the Examiner to provide any explanation of how Weinberg '946 discloses each and every element of claim 32, the rejection of independent claim 32, as well as claims 34 and 35, which depend from claim 32, should be withdrawn.

THIRD GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIMS 1, 9, 10, 15, 18–21, 32, AND 35 UNDER 35 U.S.C. § 102(b) AS BEING ANTICIPATED BY WEINBERG '260

Claims 1, 9, 10, 15, 18–21, 32, and 35 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Weinberg '260.

CLAIMS 1, 9, AND 19–21

Weinberg '260 fails to disclose each and every limitation set forth in independent claim 1. In support of the rejection of claim 1 as being anticipated by Weinberg '260, the Examiner characterized the platform 36 and substrate 38 described by Weinberg '260 as a circuit board.[57] The Examiner asserted that FIG. 3 of Weinberg illustrates "a group of integrated circuits 34 . . . mounted atop a platform 36" and "[u]nderneath the platform 36 are additional electronic components . . . which are mounted to a substrate 38 and which communicate with the integrated circuits 34."[58]

Appellant respectfully disagrees that the platform 36 and substrate 38 define a circuit board. Furthermore, even if the platform 36 and substrate 38 define a circuit board, Weinberg '260 still fails to disclose or even suggest that the integrated circuits 34 or electronic components

[57] Final Office Action dated December 9, 2008 at p. 5, item 2.
[58] *Id.*

are arranged on the platform 36 and substrate 38 to substantially conform to a predetermined non-linear profile that is based on a non-linear profile of a housing that houses the platform 36 and substrate 38, as required by Appellant's claim 1. As with Weinberg '946, Weinberg '260 is completely silent as to any relationship between a profile of the integrated circuits 34 or electronic components on the platform 36 and substrate 38 and a profile of an of the housing that houses the first and second surfaces platform 36 and substrate 38.

The Examiner reasoned that because the "integrated circuits 34 are mounted on a platform . . . compared to the integrated circuit 40, they are in a non-linear profile" and that because the integrated circuits 34 "are made to fit in the housing wherein the housing includes a non-linear rounded corners (i.e. non-linear profile)," the integrated circuits 24 are arranged in a first non-linear profile that is "based" on a non-linear profile of the housing. For at least the reasons discussed above with respect to claim 1 and Weinberg '946, the fact that the integrated circuits 34, 40 are "made to fit in the housing" does not in any way suggest that they are arranged to substantially conform to any particular non-linear profile.

Even if the integrated circuits 34, 40 are located on a circuit board that fits within a housing, it does not necessarily follow that there is a relationship between a profile with which the integrated circuits 34, 40 are arranged to conform and a profile of a housing. It appears that from the figures of Weinberg '260, the integrated circuits 34, 40 may be arranged in any particular way on the platform 36 and substrate 38 and still fit within the housing 12. In particular, the integrated circuits 34, 40 are part of an electronics package 30 having a lid 32. As shown in FIG. 3 (reproduced below) of Weinberg '260, the lid 32, the substrate 38, and platform 36 define an electronics package 30 having a particular size that fits within the housing 12 of the Weinberg '260 device.

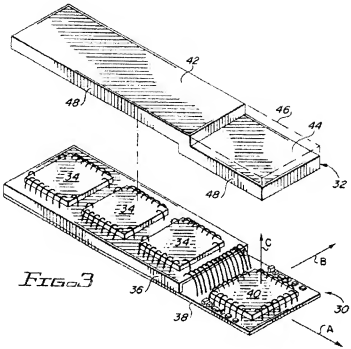

FIG. 3

Accordingly, fitting the integrated circuits 34, 40 within the housing 12 does not appear to be a consideration for the arrangement of the integrated circuits 34, 40 on the platform 36 and substrate 38. Moreover, Weinberg '260 would not have even suggested arranging the integrated circuits 34, 40 such that the circuits 34, 40 fit within the housing 12 because any arrangement of the integrated circuits 34, 40 of Weinberg '260 device on the platform 36 and substrate 38 would have fit in the housing 12 of Weinberg '260.

The Examiner asserted that the arrangement of the integrated circuits 34, 40 on the platform 36 and substrate 38 are "based on" the "rounded corners" of the Weinberg '946 housing. However, as shown in FIG. 7 (reproduced below) of Weinberg '260, any "rounded corners" of the Weinberg '946 housing segments 62, 76 do not appear to have any influence on the arrangement of the integrated circuits 34, 40 on the platform 36 and substrate 38, which are enclosed within the lid 32.

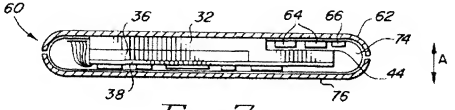

FIG. 7

Independent claim 1 requires a specific relationship between a profile with which integrated circuits and/or discrete components are arranged to substantially conform to and a profile of a housing. Weinberg '260 fails to disclose or suggest that its integrated circuits 34, 40 or electrical components are arranged in any specific profile. For at least these reasons, Weinberg '260 neither discloses nor suggests each and every element of Appellant's claim 1. Claims 9 and 19–21 depends from claim 1. The rejection of claims 1, 9, and 19–21 should be reversed for at least the reasons discussed above.

CLAIM 10

Claim 10 requires the discrete components of claim 1 to be arranged on the second surface of the circuit board such that the heights of the discrete components predominantly decrease from an edge of the second surface of the circuit board to a center of the second surface of the circuit board. With respect to the rejection of claim 10 as being anticipated by Weinberg '260, the Examiner stated that FIG. 6 (reproduced below) of Weinberg '260 illustrates electronic components 72 (characterized as "discrete components" by the Examiner) that are arranged such that the heights of the discrete components predominantly decrease from an edge of the second surface of the circuit board to a center of the second surface of the circuit board. Appellant respectfully disagrees with the Examiner.

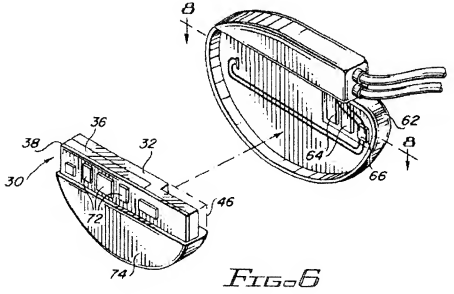

FIG. 6

Weinberg '260 does not disclose the heights of the electronic components 72. Moreover, FIG. 6 of Weinberg '260 does not illustrate electronic components 72 that have different heights,

much less heights of the discrete components predominantly decrease from an edge of the second surface of the circuit board to a center of the second surface of the circuit board, as required by Appellant's claim 10. Thus, the Examiner has failed to establish that Weinberg '260 discloses each and every element of claim 10, and the rejection of claim 10 should be reversed.

CLAIM 15 AND 18

Claim 15 requires a housing to comprise a feedthrough on a side surface that is oriented at a non-parallel, non-perpendicular angle relative to a major surface of the housing. The Examiner asserted that claim 15 is anticipated by Weinberg '260. For at least the reasons discussed below with respect to independent claim 32, Weinberg '260 fails to anticipate claim 15, as well as claim 18, which depends from claim 15. Reversal of the rejection of claims 15 and 18 is respectfully requested.

CLAIMS 32 AND 35

In support of the rejection of claim 32, the Examiner concluded that Weinberg '260 discloses a feedthrough that is located in an electronic package 30 to enable a wire connection to a resistor board 68 via wires 70.[59] In the final Office Action, the Examiner included a modified copy of FIG. 5 of Weinberg '260 that included a "box placed around a portion of the implantable medical device [that] indicates 'a major surface of the housing' that is at 'a non-parallel, nonperpendicular angle' from the feedthrough."[60] Appellant has copied the modified drawing of FIG. 5 from the final Office Action below.

[59] *Id.* at p. 6, item 2.
[60] *Id.* at pp. 6 and 7, item 2.

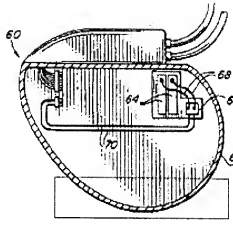

FIG. 5

Appellant respectfully disagrees with the Examiner's analysis of Weinberg '260. Weinberg '260 does not disclose a feedthrough, and the Examiner appears to be relying on an improper finding of an inherent disclosure to support the rejection of independent claim 32 (as well as the rejection of claims 15, 18, and 35). As described above, the fact that a certain characteristic may be present in the prior art is not sufficient to establish the inherency of that result or characteristic.[61] The Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.[62]

No reasonable support has been provided for the determination that Weinberg '260 discloses a feedthrough, much less a feedthrough that is oriented at a non-parallel, non-perpendicular angle relative to a major surface of a housing of the medical device. Appellant submits that the allegedly inherent characteristic does not necessarily flow from the teachings of Weinberg '260. Both the resistor board and electronics package are located within the Weinberg '260 device housing and Weinberg '260 does not suggest that these elements are separated by some other housing. Rather, FIGS. 3, 6, and 7 of Weinberg '260 illustrate an electronics package 30 that includes exposed electrical components 72. Weinberg '260 does not disclose that the exposed electrical components 72 and resister board 68 are separated by a housing, and, accordingly, the electronics package does not necessarily include a feedthrough "to enable a wire connection to the resistor board,"[63] as alleged by the Examiner. In other words, it does not appear that a feedthrough would be required to electrically couple the electronics package and

[61] *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ.2d 1955, 1957 (Fed. Cir. 1993); MPEP § 2112.
[62] *Ex parte Levy*, 17 USPQ.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original); MPEP 2112.
[63] Final Office Action dated December 9, 2008 at p. 6, item 2.

resistor board 68. Consequently, a person of ordinary skill certainly would not consider a feedthrough to be necessarily present in the Weinberg '260 device.

In addition, it is unclear how the box drawn around a portion of the implantable medical device (see the modified FIG. 5 copied above) indicates a major surface of the housing that is at a non-parallel, non-perpendicular angle relative to a feedthrough. Weinberg '260 does not even mention a feedthrough, much less illustrate an orientation of the feedthrough relative to the box drawn by the Examiner in FIG. 5. Thus, Weinberg '260 cannot teach a feedthrough that has the claimed orientation relative to the designated "major surface" of the housing, as apparently asserted by the Examiner. The Examiner has provided absolutely no disclosure in the Weinberg '260 to support the assertion that any feedthrough of the Weinberg '260 device has the claimed relationship to the alleged "major surface" of the device housing.

Moreover, it is unclear how the portion of the device in the box may be considered a "major surface of the housing." It is unclear to what portion the Examiner is referring to as the major surface, and on what reasoning the Examiner is relying on to designate the portion as a major surface of the housing. Weinberg '260 cannot anticipate each and every element of independent claim 32 because Weinberg '260 fails to disclose a feedthrough or even a relationship between a feedthrough and a housing of the medical device. Claim 35 depends from claim 32, and, therefore, is also patentable over Weinberg '260.

For at least the reasons, reversal of the rejection to claims 32 and 35 is respectfully requested.

FOURTH GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIMS 22, 25, 26, 28–32, 34, AND 35 UNDER 35 U.S.C. § 102(e) AS BEING ANTICIPATED BY ENGMARK

Claims 22, 25, 26, 28–32, 34, and 35 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Engmark.

CLAIMS 22 AND 28–31

Engmark fails to anticipate Appellant's independent claim 22. For example, Engmark fails to disclose or suggest an IMD comprising a circuit board and a telemetry coil that encircles the circuit board, where the circuit board is located substantially within a first plane, the telemetry coil is located substantially within a second plane that is substantially parallel to the

first plane, and the telemetry coil is substantially uneclipsed by the circuit board in a direction substantially perpendicular to at least one of the first or second planes, as required claim 22.

In support of the rejection of claim 22, the Examiner asserted that, "as depicted in figure 8 [of Engmark], from the top view of the implantable system, the telemetry coil 32 is located in the second plane and is substantially uneclipsed by the circuit board 27 located in the first plane, wherein the two planes are parallel to each other, thus resulting in no eclipse in a perpendicular direction to either the first or second plane."[64] Appellant respectfully disagrees that FIG. 8 of Engmark illustrates such an arrangement between the telemetry coil 32 and circuit board 27.

Appellant disagrees with the Examiner's designation of the planes in which the telemetry coil 32 and circuit board 27 of the Engmark IMD are located. As FIG. 8 (reproduced below) of Engmark clearly illustrates, the telemetry coil 32 and circuit board 27 could not be located in different, parallel planes such that the telemetry coil 32 and circuit board 27 do not eclipse each other in a substantially perpendicular direction to at least one of the first or second planes.

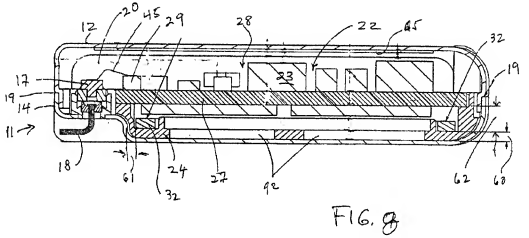

FIG. 8

Appellant agrees that the telemetry coil 32 and circuit board 27 do not appear to eclipse each other in a substantially perpendicular direction relative to a plane of the image shown in FIG. 8 of Engmark. However, the direction substantially perpendicular to the plane of the image shown in FIG. 8 of Engmark could not be a direction "substantially perpendicular to at least one of the first or second planes" in which the circuit board and telemetry coil, respectively, are located, as required by Appellant's independent claim 22. That is, the direction substantially perpendicular to the plane of the image shown in FIG. 8 of Engmark could not be a direction substantially perpendicular to two separate planes in which the telemetry coil 32 and circuit

[64] *Id.* at p. 8, item 3.

board 27 are respectively located. Instead, the direction substantially perpendicular to the plane of the image shown in FIG. 8 is a direction substantially perpendicular to a single plane in which both the circuit board 27 and telemetry coil 32 are located. That is, if a "plane" in which the circuit board 27 or the telemetry coil 32 are located is interpreted to be substantially parallel to the plane of the image shown in FIG. 8 of Engmark, the circuit board 27 would occupy all the planes that the telemetry coil 32 occupies. This contradicts Appellant's amended claim 22, which clarifies that the telemetry coil 32 and circuit board 27 are located in different planes.

Engmark neither discloses a telemetry coil that encircles a circuit board, nor a telemetry coil that is substantially uneclipsed by the circuit board in a direction substantially perpendicular to at least one of the first or second planes in which the circuit board and telemetry coil, respectively, are located. FIG. 3 illustrates a top view of the Engmark device 10 with the upper housing half 12 removed, and FIG. 4 illustrates the top view with both the upper housing half 12 and electrical module 28 removed.[65] The electrical module 28 includes the circuit board 27.[66] As FIGS. 3 and 4 of Engmark illustrate, the antenna coil 32 is not visible from the top view when the electrical module 28 is in place. The electrical module 28 covers the antenna coil 32, and therefore, antenna coil 32 does not encircle the circuit board 27, as required by Appellant's claim 22.

If the circuit board 27 and antenna coil 32 in the Engmark reference are located in substantially parallel planes, the direction substantially perpendicular to at least one of the first or second planes is shown in FIGS. 3 and 4. FIGS. 3 and 4 of Engmark illustrate the electrical module 28 covering the antenna coil 32, and, as a result, the telemetry coil in Engmark is substantially eclipsed by a circuit board in a direction substantially perpendicular to at least one of the first or second planes in which the circuit board and telemetry coil, respectively, are located. In addition, FIG. 8 (reproduced above) of Engmark clearly illustrates the circuit board 27 eclipsing the antenna coil 32 in a direction substantially perpendicular to the substantially parallel planes (i.e., the planes in which the circuit board 27 and coil 32 are located).

For at least these reasons, Engmark fails to disclose or suggest each and every element of Appellant's independent claim 22 under 35 U.S.C. § 102(e). Claims 28–31 depend from claim

[65] Engmark at paragraphs [0020] and [0022].
[66] *Id.* at paragraph [0021].

22, and, therefore, are also patentable over Engmark. Reversal of the rejection of claims 22 and 28–31 is respectfully requested.

CLAIMS 25 AND 26

Claim 25 requires an IMD with a plurality of integrated circuits and a plurality of discrete components, wherein the integrated circuits and discrete components are coupled to the circuit board, and a thickness of the circuit board including the integrated circuits and discrete components is less than or equal to 3.8 millimeters. Appellant's claim 26 requires an IMD wherein a radial thickness of the housing is less than or equal to 5.2 millimeters.

In support of the rejection of claims 25 and 26, the Examiner cited paragraph [0039] of Engmark, which describes a minimum distance between an antenna coil and the housing as well as a minimum distance between the antenna coil and the circuit board. At paragraph [0039], Engmark does not disclose the thickness of the circuit board that includes the integrated circuits and discrete components or the thickness of the housing. Therefore, the cited passage relied on by the Examiner is irrelevant with respect to the requirements of claims 25 and 26.

Engmark does not disclose or suggest a thickness of the circuit board including the integrated circuits and discrete components of less than or equal to 3.8 millimeters or a radial thickness of the housing of less than or equal to 5.2 millimeters, as required by Appellant's claims 25 and 26 respectively. Reversal of the rejection of claims 25 and 26 is respectfully requested.

CLAIMS 32, 34, AND 35

Engmark also fails to anticipate Appellant's independent claim 32. In support of the rejection of claim 32, the Examiner merely quoted portions of Engmark without further explanation. In particular, the final Office Action stated:

> As to claims 32 and 34–35, "Circuit board 27 of module 28 includes metal contact areas 29 that are conveniently electrically coupled to inner portions 17 of one or more electrical feed-throughs 16 of device 10"(page 2, paragraph 21). "One or more feed-through connectors permit electrical communication to and from the electrical components and circuitry contained within the housing while at the same time maintaining the hermeticity of the device" (page 1, paragraph 3).[67]

[67] Final Office Action dated December 9, 2008 at p. 9, item 3.

The Examiner appears to be characterizing the electrical feedthroughs 16 of Engmark as a feedthrough located on the side surface of a device housing 11. However, as shown in FIG. 1 (reproduced below) of Engmark, the feedthroughs 16 of the Engmark device are located on a major surface of the housing 11 rather than a side surface.

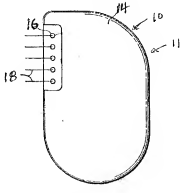

FIG. 1

Moreover, the feedthroughs 16 are not oriented at a non-parallel, non-perpendicular angle relative to the major surface of the housing 11, as required by independent claim 32. Engmark does not disclose the orientation of the feedthroughs 16 relative to a major surface of the housing 11. Therefore, Engmark does not disclose each and every element of independent claim 32. Claims 34 and 35 depend from claim 32, and, therefore, Engmark fails to disclose or suggest each and every element of claims 34 and 35.

Independent claim 32 is not directed toward any IMD including a feedthrough, but an IMD including a side surface includes a feedthrough that is oriented at a non-parallel, non-perpendicular angle relative to the major surface of the IMD housing. Engmark does not disclose or suggest the particular orientation of the feedthrough required by claim 32. For at least these reasons, the Examiner has failed to establish a *prima facie* case of anticipation of claims 32, 34, and 35. Reversal of the rejection of claims 32, 34, and 35 is respectfully requested.

FIFTH GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIMS 10–14, 25, AND 26 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER WEINBERG '946

Claims 10–14, 25, and 26 stand under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '946.

CLAIM 10

Claim 10 depends from independent claim 1 and requires the discrete components to be arranged on the second surface of the circuit board such that the heights of the discrete components predominantly decrease from an edge of the second surface of the circuit board to a center of the second surface of the circuit board. With respect to the rejection of claim 10 as being obvious in view of Weinberg '946, the Examiner acknowledged that Weinberg '946 does not disclose the arrangement of discrete components specified in claim 10.[68] However, the Examiner reasoned that, "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the positioning of the discrete components, since it has been held that rearranging parts of an invention only involves routine skill in the art."[69] The Examiner asserted that rearranging the discrete components of the Weinberg '946 device would provide a medical device having a "narrower profile."[70] Appellant respectfully disagrees with the Examiner's assertion of obviousness.

The arrangement of discrete components recited in claim 10 is not a mere "rearrangement" of parts, as the Examiner asserts. Instead, the arrangement of discrete components is a specific arrangement that is based on a non-linear profile of a housing. Given the lack of disclosure in Weinberg' 946 relating to the arrangement of the tantalum capacitors 57 of the pacemaker, which the Examiner characterized as "discrete components," or a profile of the pacemaker housing 12, it is unclear why one having ordinary skill in the art would have modified the tantalum capacitors 57 to have the arrangement recited in Appellant's claim 10.

As discussed in the MPEP, "[t]he mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device."[71] While the Examiner provided a reason for modifying the tantalum capacitors 57 to have the arrangement required by Appellant's claim 10, the Examiner's reason

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[68] *Id.* at p. 10, item 1.
[69] *Id.*
[70] *Id.*
[71] MPEP 2144.04(VI)(C), *citing Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).

lacks rational underpinning.[72] For example, it is unclear how rearranging the tantalum capacitors 57 of the Weinberg '946 pacemaker would result in a medical device having a "narrower profile," as asserted by the Examiner.

The tantalum capacitors 57 of the Weinberg '946 pacemaker are enclosed in a housing 12, and, accordingly, arranging the tantalum capacitors 57 such that they predominantly decrease from an edge of the second surface of the circuit board to a center of the second surface of the circuit board, as required by Appellant's claim 10, would not change the profile of the pacemaker. Thus, arranging the tantalum capacitors 57 in the manner required by Appellant's claim 10 would not result in a pacemaker that "occupies less space in the patient and is less noticeable once implanted,"[73] as the Examiner asserted.

For at least these reasons, the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 10, and the rejection of claim 10 should be reversed.

CLAIMS 11–14

Claims 11–14 depend from independent claim 1. As discussed above with respect to independent claim 1, Weinberg '946 fails to disclose or suggest each and every element of claim 1. Thus, for at least the reasons discussed above with respect to independent claim 1, claims 11–14 are not obvious over Weinberg '946 and the rejection of claims 11–14 should be reversed.

Appellant further notes that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 11 and 12, which recite specific thicknesses of the circuit board of claim 1 and a radial thickness of the housing of claim 1, respectively. In support of the rejection of claims 11 and 12, the Examiner stated that "it would have been obvious to one having ordinary skill in the art . . . to modify the size of the housing and the components [of Weinberg '946], since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges only involves routine skill in the art" and cited *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).[74] The Examiner further asserted that modifying the Weinberg' 946 device to include the dimensions

[72] *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)("Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")
[73] Final Office Action dated December 9, 2008 at p. 10, item 1.
[74] *Id.*

recited in claims 11 and 12 would be obvious because it would provide the predictable results of providing a medical device with a "narrower profile."[75]

The Examiner has failed to indicate how the circuit board thickness recited in claim 11 and the radial thickness of the housing recited in claim 12 are optimum or merely "workable ranges" for the Weinberg '946 device. Moreover, Weinberg '946 does not provide any indication that the dimensions recited in claims 11 and 12 would necessarily narrow a profile of the Weinberg '946 pacemaker. Thus, the Examiner's proposed rationale for modifying Weinberg '946 to have the specific dimensions of claims 11 and 12 appears to lack any reasonable basis.

Moreover, the Examiner's reliance on *In re Aller* to support the rejection of claims 11 and 12 is improper. The MPEP indicates that a rationale used by a court may support an obviousness rejection if the facts in the prior legal decision are sufficiently similar to those in the application under examination.[76] The MPEP indicates that *In re Aller* relates to optimization of concentration or temperature,[77] neither of which is recited in claims 11 and 12.

CLAIMS 25 AND 26

Claims 25 and 26 depend from independent claim 22. As discussed above with respect to independent claim 22, Weinberg '946 fails to disclose or suggest each and every element of claim 22. Thus, for at least the reasons discussed above with respect to independent claim 22, claims 25 and 26 are not obvious over Weinberg '946 and the rejection of claims 25 and 26 should be reversed.

Appellant further notes that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 25 and 26 for at least the reasons discussed with respect to claims 11 and 12.

SIXTH GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIMS 11–14, 25, AND 26 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER WEINBERG '260

Claims 11–14, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '260.

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[75] *Id.*
[76] MPEP 2144.04.
[77] MPEP 2144.05 (II)(A).

CLAIMS 11–14

Claims 11–14 depend from independent claim 1. As discussed above with respect to independent claim 1, Weinberg '260 fails to disclose or suggest each and every element of claim 1. Thus, for at least the reasons discussed above with respect to independent claim 1, claims 11–14 are not obvious over Weinberg '260 and the rejection of claims 11–14 should be reversed.

The Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 11 and 12. Just as with the rejection of claims 11–14 as being obvious over Weinberg '946, the Examiner relied on *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) to support the rejection of claims 11–14 in view of Weinberg '260.[78] Appellant respectfully disagrees with the Examiner's reliance on *In re Aller* to support the rejection of claims 11 and 12 for the reasons discussed above with respect to the rejection of claims 11–14 as being obvious over Weinberg '946.

The Examiner further asserted that modifying the Weinberg '260 device to include the dimensions recited in claims 11 and 12 would be obvious because it would provide the predictable results of providing a medical device with a "narrower profile."[79] The Examiner has failed to indicate how the circuit board thickness recited in claim 11 and the radial thickness of the housing recited in claim 12 are optimum or merely "workable ranges" for the Weinberg '260 device. Moreover, Weinberg '260 does not provide any indication that the dimensions recited in claims 11 and 12 would necessarily narrow a profile of the Weinberg '260 pacemaker. Thus, the Examiner's proposed rationale for modifying Weinberg '260 to have the specific dimensions of claims 11 and 12 appears to lack any rational underpinning.

CLAIMS 25 AND 26

Claims 25 and 26 depend from independent claim 22. The Examiner failed to reject claim 22 as being either anticipated by or obvious in view of Weinberg '260. Indeed, the Examiner has not provided any reasoning or support for a conclusion that that Weinberg '260 discloses each and every element of independent claim 22. Thus, it is unclear how Weinberg '260 suggests each and every element of claims 25 and 26. For at least this reason, the Examiner

[78] Final Office Action dated December 9, 2008 at p. 11, item 2.
[79] *Id.*

has failed to establish a *prima* facie case of obviousness with respect to claims 25 and 26 and the rejection of claims 25 and 26 should be reversed.

Appellant further notes that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 25 and 26 for at least the reasons discussed with respect to claims 11 and 12.

SEVENTH GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIMS 8, 23, AND 24 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER WEINBERG '946 IN VIEW OF BARDY

Claims 8, 23, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weinberg '946 in view of Bardy.

CLAIM 8

Claim 8 specifies that the integrated circuits and/or discrete components of claim 1 are arranged on respective surfaces of a circuit board to substantially conform to a first predetermined non-linear profile that comprises a second non-linear profile of the housing that houses the circuit board. The Examiner acknowledged that Weinberg '946 fails to disclose housing comprising non-linear profile, and cited Bardy as disclosing a curved housing. [80] The Examiner asserted that it would have been obvious to one having ordinary skill in the art to modify the housing of Weinberg '946 to include the curved housing of Bardy "to provide the predictable results of ensuring the medical device will fit the contours of the human body once implanted."[81]

The Examiner's conclusion of obviousness fails to address the specific features of Appellant's claim 8. For example, the Examiner has failed to indicate how Weinberg '946 or Bardy disclose or suggest the particular arrangement of the integrated circuits and/or discrete components required by claim 8. Claim 8 requires the housing of the IMD that houses the circuit board to have a non-linear profile, and the integrated circuits and/or discrete components to be arranged on a circuit board to substantially conform to the non-linear profile of the housing. Weinberg '946 fails to disclose or suggest that the electrical components 56 of its pacemaker are arranged in a predetermined non-linear profile.

[80] Final Office Action dated December 9, 2009 at page 12, item 3.
[81] *Id.*

Even if the electrical components 56 are arranged in a predetermined non-linear profile, as asserted by the Examiner, Weinberg '946 does not suggest that the profile of electrical components 56 comprises a profile of the housing 12. Thus, even if it would have been obvious to modify the housing of Weinberg '946 in view of Bardy to include a curved housing, an assertion with which Appellant does not necessarily agree, the Examiner has failed to provide a reason why one having ordinary skill in the art would have arranged the electronic components 56 (the "integrated circuits" according to the Examiner) or the capacitors (the "discrete components" according to the Examiner) on a circuit board to substantially conform to a predetermined non-linear profile that is based on the non-linear profile of the housing, as required by claim 8. Reversal of the rejection of claim 8 is respectfully requested.

CLAIM 23

Claim 23 depends from independent claim 22. As discussed above with respect to independent claim 22, Weinberg '946 fails to disclose or suggest each and every element of claim 22. Bardy fails to cure the fundamental deficiencies in Weinberg '946 identified above. Thus, Weinberg '946 in view of Bardy fails to disclose or suggest each and every element of claim 23, and the rejection of claim 23 should be reversed.

CLAIM 24

Claim 24 recites a housing that is substantially concave in two axes and includes a central portion and a taper portion, the circuit board is located within the central portion, and the telemetry coil is located within the taper portion. Claim 24 was rejected under 35 U.S.C. § 103(a) as being obvious over Weinberg '946 in view of Bardy. The Examiner stated that Bardy discloses a curved housing.[82] Even if this is correct, nothing in Weinberg '946 or Bardy suggests an IMD including a circuit board is located within a central portion of a substantially concave housing, and a telemetry coil located within a taper portion of the housing, as required by claim 24. The Examiner failed to address these requirements of claim 24, and, accordingly, failed to meet the burden of demonstrating that claim 24 is obvious in view of the cited art. Appellant respectfully requests reversal of the rejection of claim 24.

[82] *Id.*

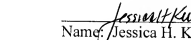
EIGHTH GROUND OF REJECTION UNDER APPEAL – THE REJECTION OF CLAIM 36

The final Office Action dated December 9, 2008 indicated that claim 36, which depends from independent claim 1, was rejected. However, the Examiner did not include claim 36 in any of the previous grounds of rejection that are under appeal. The Examiner failed to address the features of claim 36 or provide any indication that the features of claim 36 were considered. On at least this basis, Appellant submits that the Examiner has failed to meet the burden of demonstrating that claim 36 is nonpatentable. Reversal of the rejection of claim 36 is respectfully requested.

CONCLUSION

The Examiner has failed to meet the burden of establishing a *prima facie* case of nonpatentability with respect to Appellant's claims 1–15, 17–32, and 34–36. Appellant respectfully requests review of the rejections addressed above, and reversal of all pending rejections. Appellant respectfully requests separate review by the Board for each of the grounds or rejection addressed above under separate headings.

Date: April 9, 2009

By: 

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APPENDIX A

THE CLAIMS ON APPEAL

Claim 1: An implantable medical device comprising:

a plurality of integrated circuits;

a plurality of discrete components;

a circuit board that is coupled to each of the integrated circuits and discrete components; and

a housing to house the circuit board,

wherein the circuit board comprises first and second opposing surfaces, the housing houses the first and second surfaces, each of the integrated circuits is located on the first surface, and each of the discrete circuit components is located on the second surface, and

wherein at least one of the integrated circuits or discrete components are arranged on the respective one of the first or second surfaces to substantially conform to a first predetermined non-linear profile that is based on a second non-linear profile of the housing.

Claim 2: The implantable medical device of claim 1, wherein the implantable medical device is configured such that when the implantable medical device is implanted on the cranium such that the first surface is oriented away from a cranium of a patient, the second surface is oriented toward the cranium.

Claim 3: The implantable medical device 1, further comprising a telemetry coil within the housing that encircles the circuit board.

Claim 4: The implantable medical device 3, wherein the telemetry coil is substantially uneclipsed by the circuit board.

Claim 5: The implantable medical device of claim 3, wherein the circuit board is located substantially within a first plane and the telemetry coil is located substantially within a second plane, and the first and second planes are substantially parallel.

Claim 6: The implantable medical device of claim 5, wherein the housing is configured to be implanted on a surface of a cranium of a patient such that the second plane is located closer to the surface of the cranium of the patient than the first plane when the implantable medical device is implanted on the cranium such that the second surface of the circuit board is oriented closer to the cranium than the first surface.

Claim 7: The implantable medical device of claim 3, wherein the housing includes a central portion and a taper portion, the circuit board is located within the central portion, and the telemetry coil is located within the taper portion.

Claim 8: The implantable medical device of claim 1, wherein the first predetermined non-linear profile comprises the second profile of the housing.

Claim 9: The implantable medical device of claim 1, wherein each of the integrated circuits has a height, and the integrated circuits are arranged on the first surface of the circuit board such that the heights of the integrated circuits predominantly increase from an edge of the first surface of the circuit board to a center of the first surface of the hybrid circuit board.

Claim 10: The implantable medical device of claim 1, wherein each of the discrete components has a height, and the discrete components are arranged on the second surface of the circuit board such that the heights of the discrete components predominantly decrease from an edge of the second surface of the circuit board to a center of the second surface of the circuit board.

Claim 11: The implantable medical device of claim 1, wherein a thickness of the circuit board including the integrated circuits and the discrete components is less than or equal to 3.8 millimeters.

Claim 12: The implantable medical device of claim 1, wherein a radial thickness of the housing is less than or equal to 5.2 millimeters.

Claim 13: The implantable medical device of claim 1, wherein the circuit board is substantially concave along at least one axis.

Claim 14: The implantable medical device of claim 13, wherein the circuit board comprises flex tape.

Claim 15: The implantable medical device of claim 1, wherein the housing comprises a feedthrough on a side surface that is oriented at a non-parallel, non-perpendicular angle relative to a major surface of the housing.

Claim 17: The implantable medical device of claim 15, wherein the angle is approximately equal to 45 degrees.

Claim 18: The implantable medical device of claim 15, wherein the feedthrough is oriented substantially along a radius of the housing.

Claim 19: The implantable medical device of claim 1, wherein the housing comprises a first housing, the implantable medical device further comprising a second housing that houses a power source that provides power to the integrated circuits and the discrete components.

Claim 20: The implantable medical device of claim 1, wherein implantable medical device comprises an implantable neurostimulator.

Claim 21: The implantable medical device of claim 20, wherein the implantable medical device is adapted to deliver stimulation to a brain of a patient.

Claim 22: An implantable medical device comprising:

a circuit board;

a telemetry coil that encircles the circuit board; and

a housing to house the circuit board and the telemetry coil,

wherein the circuit board is located substantially within a first plane and the telemetry coil is located substantially within a second plane that is different than the first plane, the first and second planes are substantially parallel, and the telemetry coil is substantially uneclipsed by the circuit board in a direction substantially perpendicular to at least one of the first or second planes.

Claim 23: The implantable medical device of claim 22, wherein the housing comprises a substantially concave portion and is configured to be implanted on a surface of a cranium of a patient such that the second plane is located closer to the surface of the cranium of the patient than the first plane when the medical device is implanted on the cranium such that the substantially concave portion of the housing substantially conforms to the surface of the cranium.

Claim 24: The implantable medical device of claim 23, wherein the housing is substantially concave in two axes and includes a central portion and a taper portion, the circuit board is located within the central portion, and the telemetry coil is located within the taper portion.

Claim 25: The implantable medical device of claim 22, further comprising:

a plurality of integrated circuits; and

a plurality of discrete components,

wherein the integrated circuits and discrete components are coupled to the circuit board, and a thickness of the circuit board including the integrated circuits and discrete components is less than or equal to 3.8 millimeters.

Claim 26: The implantable medical device of claim 22, wherein a radial thickness of the housing is less than or equal to 5.2 millimeters.

Claim 27: The implantable medical device of claim 22, wherein the circuit board is substantially concave along at least one axis.

Claim 28: The implantable medical device of claim 22, wherein the circuit board comprises flex tape.

Claim 29: The implantable medical device of claim 22, wherein the housing comprises a first housing, the implantable medical device further comprising a second housing that houses a power source that provides power to the circuit board.

Claim 30: The implantable medical device of claim 22, wherein implantable medical device comprises an implantable neurostimulator.

Claim 31: The implantable medical device of claim 30, wherein the implantable medical device is adapted to deliver stimulation to a brain of a patient.

Claim 32: An implantable medical device comprising a housing that includes a major surface and a side surface, wherein the side surface includes a feedthrough that is oriented at a non-parallel, non-perpendicular angle relative to the major surface.

Claim 34: The implantable medical device of claim 32, wherein the angle is approximately equal to 45 degrees.

Claim 35: The implantable medical device of claim 32, wherein the feedthrough is oriented substantially along a radius of the housing.

Claim 36: The implantable medical device of claim 1, wherein the second non-linear profile of the housing is substantially concave along at least one axis.

APPENDIX B
EVIDENCE

None.

APPENDIX C
RELATED PROCEEDINGS

None.